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CHICAGO ACADEMY OF SCIENCES

REVISION OF THE FIFTY-FOURTH GROUP OF THE
PSELAPHID GENUS *REICHENBACHIA* (COLEOPTERA)

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INTRODUCTION

In the Raffrayan arrangement of the genus *Reichenbachia*, the Group LIV held six neotropical species (Raffray, 1904, p. 241-242). These were *binodula* (Schaufuss), *celata* (Sharp), *immodica* Raffray, Raffray, *stussineri* (Reitter), and *subfoveolata* (Schaufuss). Subsequently, Fletcher (1928) added a seventh species, *bifoveata*. Some years later, when the author attempted a general review of the neotropical pselaphids (Park, 1942); so little was known about this fifty-fourth group that he could do nothing more than list the species. For example, the seven species had not been collected and: reported upon since their original descriptions, so that no zoögeographic information was available; one species was known only from the female type, and three were described without definite allocation of sex; no key to the species could be developed; finally, one species, *subfoveolata*, was so poorly known that Raffray (1904) had to list it in two groups (XXI and LIV), a course followed by Park (1942).

Since this last date, considerable information has accumulated and a further discussion of this group is warranted.

PRESENT COMPOSITION OF GROUP LIV

In the first place, it appears certain that *subfoveolata* does not belong in this group. This species was described by Schaufuss (1872, p. 262-263) in the genus *Bryaxis*, and a free translation of a part of his original remarks is pertinent here:

"The second antennal segment is thicker and shorter than the sixth; the third, fourth, and fifth are each two-thirds as long as the sixth but are the same width as the sixth, seventh, and the eighth; the seventh and eighth are spherical; the ninth to eleventh form a longish knob.

Raffray (1904) placed this species in Group XXI (p. 235) and in Group LIV (p. 241) ; this same double allocation was followed by the author (Park, 1942, p. 141 and 147) .

Schaufuss (1887, p. 117-121) later gave a partial key to "Bryaxis," in which he placed his *subfoveolata* in the section having three small, sub-equal cephalic foveae. This precludes group LIV, since these species lack entirely the frontal fovea in both sexes.

Whether or not *subfoveolata* belongs to XXI or another group turns on the solution to the question of antennal structure. Group XXI holds species with "normal" antennae, and the quotation given above suggests that the degree of abnormality in the antennae of *subfoveolata* is not excessive enough to place this species beyond XXI; certainly, it would be very much out of place in Groups XL and XLI, where it would key to in modern systems. When *subfoveolata* can be redescribed, this species can be readily allocated to a particular group of *Reichenbachia*, in the meantime, it can be omitted from LIV on the basis of Schaufuss' later opinion on its cephalic foveae, and left in XXI.

The removal of *subfoveolata* leaves the fifty-fourth group composed of species having the following combination of critical structural features: (1) head with a pair of pubescent foveae on the vertex, between the eyes, but with the frontal fovea wholly absent, i.e. the head is bifoveate in both sexes; (2) the antennae are relatively normal in both sexes, the degree of variation in this character being set forth in the key which follows.

There is considerable variation in certain other details. Thus, the group is structurally divisible into two parts on the number of foveae on each elytron, some of the species being trifoveate, and some bifoveate. The basal abdominal carinae of the first visible tergite vary within the group in both degree of separation, and in length: from a separation of not more than one-fourth to slightly more than one-third of the segmental width, and from inconspicuous ridges not more than one-fifth of the segmental length to conspicuous carinae, either divergent or parallel, almost one-half the segmental length. There is also great variation in the mandibles of the male sex: this sex may have the mandibles simple, without

external teeth; or the right mandible may bear an external tooth, while the left mandible is simple; or both mandibles bear an external tooth.

These mandibular variations (Pl. I) are species specific, and are made use of in the following key. In addition, the male sex may have simple legs, or each mesotrochanter may bear a short, inconspicuous tooth at center of its ventral face; there is a small amount of antennal abnormality in some of the species, especially from the fourth to the sixth segments; the metasternum is usually more concave than in the female sex; the last sternite is usually elongate and more or less concave or longitudinally impressed.

Females have simple mandibles, and the metasternum and last sternite are simple and relatively convex. This sex has a small amount of antennal abnormality in some species.

In general, then, the sexes can be distinguished by external anatomy. This is not an invariable guide. For example, a new species to be described in this report has the male sex characterized by simple mandibles, simple, convex metasternum, and a simple, convex last sternite that has only a weakly defined concavity at its base. In short, its masculinity was demonstrated only by dissection of the abdomen, and by direct study of the aedeagus (Pl. I, 6) .

KEY TO THE SPECIES OF GROUP LIV

- | | | |
|-------|---|--------------------------|
| 1 | Elytra trifoveate | 2 |
| | Elytra bifoveate | 5 |
| 2 (1) | Basal abdominal carinae separated by slightly more than one-third of the segmental width. | <i>stussineri</i> . |
| | Basal abdominal carinae separated by not more than one-fourth of the segmental width | 3 |
| 3 (2) | Basal abdominal carinae divergent, approximate, separated by one-fifth of the width of the disc of the first tergite, and relatively long, one-third as long as segment | female <i>obnubila</i> . |
| | Basal abdominal carinae parallel, separated by one-fourth of the segmental width. | 4 |
| 4 (3) | Antennal segment V three times longer than wide | male <i>immodica</i> . |
| | Antennal segment V two times longer than wide | female <i>immodica</i> . |

- 5 (1) One or both mandibles bearing a large, triangular tooth
on the external ramus 6
Mandibles without external teeth (Pl. I, 1) 7
- 6 (5) Right mandible bearing an external tooth; left mandible
not externally toothed; mesotrochanters not toothed
(Pl. I, 2) male *binodula*.
Both mandibles with an external tooth; mesotrochanters
with a small tooth at center of ventral face (Pl. I, 3)
male *bicuspidata*.
- 7 (5) Basal abdominal carinae very short and inconspicuous,
one-fifth as long as segment female *pacca*.
Basal abdominal carinae much longer, at least one-third
as long as the segment 8
- 8 (7) Terminal (fifth visible) sternite elongate, deeply, longi-
tudinally impressed or concave, and apically lobed;
mesotrochanters each with a small tooth 9
Terminal (fifth visible) sternite simply convex 10
- 9 (8) Antennal segment V slightly longer than IV; basal ab-
dominal carinae separated by slightly less than half
the segmental width male *celata*.
Antennal segment V subequal in length to IV; basal ab-
dominal carinae separated by slightly more than
half the segmental width male *bifoveata*.
- 10 (8) Antennal segments IV and V subequal in length 11
Antennal segment V slightly longer than IV female *celata*.
- 11 (10) Antennal segment VII slightly longer than VI, and sub-
equal in length to V female *bifoveata*.
Antennal segment VII subequal in length to VI, or slightly
shorter than VI 12
- 12 (11) Antennal segment X . obviously smaller, than XI, being
one-fourth narrower and half as long (Pl. I, 5)
female *binodula*.
Antennal segment X relatively very large, being only
slightly narrower and only a third shorter than seg-
ment XI (Pl. I, 4) male *biegineus*.

***Reichenbachia bierigi* new species**

Type Male. Measurements: head 0.34 (frontoclypeal ridge to posterior limit of cervicum.) x 0.34 mm. (including eyes) ; pronotum 0.34 x 0.42 mm.; elytra 0.47 x 0.64 mm.; abdomen 0.53 x 0.60 mm.; total length 1.7 mm.

Uniform yellowish brown. Flavous pubescence conspicuous, semi-appressed, moderately long (0.05 to 0.08 mm.). Integuments polished, sparsely punctulate to impunctate.

Head with subtrapezoidal vertex bearing a pair of large pubescent vertexal foveae between the prominent, coarsely faceted eyes. Eyes one-third longer than the prominent, nearly parallel tempora; temporal angles slightly rounded. Front declivous, simple, narrowed between antennal acetabulae, and with the transverse frontoclypeal crest well-developed over the relatively small, simple labrum; frontal fovea absent. Mandibles simple, without external teeth. Ventral surface of head and maxillary palpi as for genus.

Antennae simple, elongate (0.80 mm.) ; segment I elongate; II slightly longer than wide, smaller than first, ends rounded; III as long as second, apically inflated; IV, V and VI subequal in shape and size, simple, slightly longer than wide, shorter than third; VII of same shape and width as sixth, very slightly shorter; VIII smallest antennal segment, subquadrate, submoniliform; IX as wide as first, slightly wider than long, slightly longer than eighth X large, obtrapezoidal, slightly narrower than eleventh, two-thirds as long as eleventh; XI large, truncate at base, with oblique and bluntly pointed apex (Pl. I, 4).

Pronotum with aspect of genus, simple and convex disc, and with three, free subbasal foveae: a large, pubescent lateral fovea on each side, and a small, nude median fovea.

Elytra bifoveate, the foveae relatively large and clearly cut; sutural stria entire; discal stria one-half of the elytral length.

Tergites in a median length ratio of 3.5/2.3/2/1.5/1.3 with a pair of slender basal abdominal carinae one-third the length of the first tergite, and separated by slightly more than one-third the segmental width.

Five visible sternites in a median length ratio of 3/1/0.8/0.25/1.5 with the last simple, longitudinally rounded-triangular, slightly subgranular, convex save for a small, poorly defined concavity in basal third.

Metasternum generally simple, convex medianly between the coxae, and slightly declivous posteriorly. Legs simple; tarsi as for genus.

Aedeagus small, acute oviform, 0.30 mm. long by 0.140 mm. wide (Pl. I, 6).

Described on three male specimens, one of which was dissected. The type (Cornell U. Type No. 2372) and paratypes are from Costa Rica.¹ One of the paratypes is in the author's collection.

This species, named after Dr. Alexander Bierig, of San Jose, Costa Rica, is a member of Group LIV. It is related most closely, both morphologically and zoögeographically, to *binodula* of Colombia and Panama. It is easily distinguished from the male *binodula* by its simple mandibles (Pl. I, 2), and from the female *binodula* by its much larger tenth anten-

With respect to the numerous species of neotropical *Reichenbachia*, the females of three species are apt to be confused with the pselaphids of Group LIV. These three species are *nominata* (Sharp) of Group LV, *appendiculata* Raffray, with its subspecies *stroheckeri* Park of Group LVI, and *designata* (Sharp) of Group LIX. These groups lack the frontal fovea, and the females lack the remarkable antennal abnormalities of the males, so that such females might key to group LIV females, or to the male of *bierigi* unless care is taken.

With this in mind, *nominata* (Sharp) and *designata* (Sharp) have trifoveate elytra, and their females can be separated from Group LIV females with trifoveate elytra on the basis of their antennal structure (Park, 1945, p. 385). The female of *stroheckeri* Park has been discovered recently (Park, 1947), and can be separated from *pacifica* Park, with which it could be confused by its short basal abdominal carinae and bifoveate elytra, by the abnormally elongate fifth antennal segment.

Zoögeographically, Group LIV occupies the area from Veracruz, Mexico to northern Colombia (Pl. II). Within this region eight of the nine species have been reported. The ninth species, *stussineri* (Reitter) is unknown to me. It is distant from other species of the group, being known only from Santa Rita, Brazil.

Checklist of Group LIV, *Reichenbachia*

bicuspidata Park, 1945, p. 368; 1946, p. 460.

Type locality: Puerto de Ocos, Guatemala, sea level, just over the border from Chiapas.

¹ Unfortunately, no further data are available on the locality and collector. These specimens are a part of the Cornell University neotropical pselaphids sent to me for identification, acknowledgement of which was made previously (Park, 1945, p. 277).

***bierigi* new species.**

Type locality: Costa Rica.

***bifoveata* Fletcher, 1928, p. 216, Pl. XII, fig. 10.**

bifoveata Park, 1942, p. 147; 1943, p. 208; 1944, p. 239; 1945, p. 386.

Type locality: Veracruz, Veracruz, Mexico.

***binodula* (Schaufuss), 1872, p. 264 (Bryaxis).**

binodula Raffray, 1904, p. 242; 1908, p. 240; Park, 1942, p. 147.

Type locality: Colombia.

Range: Colombia and northward into the Panama Canal Zone.²

***celesta* (Sharp), 1887, p. 25 (Bryaxis).**

celesta Raffray, 1904, p. 241; 1908, p. 240; Fletcher, 1928, p. 217; Park, 1942, p. 147; 1943, p. 208; 1944, p. 257; 1945, p. 366; 1946, p. 459.

Type locality: Guatemala City, Guatemala.

Range: Managua, Nicaragua Guatemala City, Guatemala; Jalapa and Monte Alto (Veracruz) , Ciudad Carmen (Campeche) , Reforma and Pocvicuc (Tabasco) , and Yagalaxi and Rancho Monter (Oaxaca) , Mexico.

***immodica* Raffray, 1904, p. 175.**

immodica Raffray, 1908, p. 240; Park, 1942, p. 147.

Type locality: Colombia.

***obnubila* Raffray, 1904, p. 175.**

obnubila Raffray, 1908, p. 240; Park, 1942, p. 148; 1943, p. 208; 1944 p. 256.

Type locality: Yucatan, Mexico.

***pacifica* Park, 1945, p. 368.**

bifoveata Park, 1944, p. 239.



basis of length of basal abdominal carinae and other features cited in 1945, as well as the lack of data on intergradation with the Atlantic population of *bifoveata*.

Type locality: Acapulco, Guerrero, Mexico.

***stussineri* (Reitter), 1882, p. 381.**

stussineri Raffray, 1904, p. 242; 1908, p. 240; Park, 1942, p. 148.

Type locality: Santa Rita, Brazil.

² Among numerous pselaphids sent to me recently by Major and Mrs. A. O. Meyer of the Zone, a male and a female of *binodula* were included. These were taken a light, on the night of January 14, 1946 near the Zone penitentiary.

LITERATURE CITED

Fletcher, F. C.

- 1928 Pselaphidae collected by Dr. Alfons Dampf in Central America. *Ann. Ent. Soc. Amer.*, vol. 21, p. 203-231.

Park, Orlando

- 1942 A study in Neotropical Pselaphidae. *Northwestern University Studies Biol. Med.*, no. 1, p. vii +- 1-404, pl. I-XXI.
- 1943 A preliminary study of the Pselaphidae (Coleoptera) of Mexico. *Bull. Chicago Acad. Sci.*, vol. 7, p. 171-226, pl. I-III
- 1944 New and little known Pselaphidae (Coleoptera) from Brazil, Colombia, and Mexico, with keys to Mexican genera and species. *Ibid.*, vol. 7, p. 227-267, pl. I-II.
- 1945 Further studies in Pselaphidae (Coleoptera) of Mexico and Guatemala. *Ibid.*, vol. 7, p. 331-44-3, pl. I-XI.
- 1946 Checklist of Pselaphidae (Coleoptera) known from Guatemala. *Ibid.*, vol. 7, p. 45_7-468.
- 1947 New and little known Pselaphidae (Coleoptera) from Tropical America. *Ibid.*, (*in press*).

Raffray, Achille

- 1904 Genera et Catalogue des Psélaphides. *Ann. Soc. ent. France*, vol. 73, p. 1-476, 636-658.
- 1908 Pselaphidae. *Genera Insectorum*, 64th Fascicule, P. Wytsmann, ed. Bruxelles, p. 1-487, pl. I-IX.

Reitter, Edmund

- 1882 Neue Pselaphiden and Scydmaeniden aus Central und Südamerika. *Verhandl. Keiserl. König. zool.-bot. Gesel. Wien.*, vol. 32, p. 371-386.

Schaufuss, L. W.

- 1872 Beschreibung einiger Pselaphiden. *Nunquam otiosus, Zoologische Mittheilungen*, Dresden, vol. 2, p. 259-274, 281-290, 357-360.
- 1887 Beschreibung neuer Pselaphiden. *Tijdschrift voor Entom.*, vol. 30, p. 91465.

Sharp, David

- 1887 Pselaphidae. *Biologia Centrali-Americana. Coleoptera*, vol. 2, pt. 1, p. 1-46, pl. I.

PLATES I AND II

PLATE I

1. Mandibular outline of both sexes of *celata* (Sharp). (This figure will serve in a general way for other members of Group LIV that have the mandibles externally untoothed in either one or both sexes.)
2. Mandibular outline of the male *binodula* (Schaufuss).
3. Mandibular outline of the male *bicuspidata* Park.
4. Antenna of *Reichenbachia bierigi* new species, drawn from the male type.
5. Antennal segments X and XI of the female *binodula* (Schaufuss). This is drawn to the same scale as the preceding four figures.
6. Aedeagus of *Reichenbachia bierigi* new species, drawn from a slide mount of a dissected paratype at 700 diameters. Dorsal face, with apical end to right. Stippled areas represent the bulbar and ejaculatory muscles, and their attachment surfaces on the internal face of the basal bulb of the median lobe. Sclerotized stylus is diagonally hatched.

PLATE I

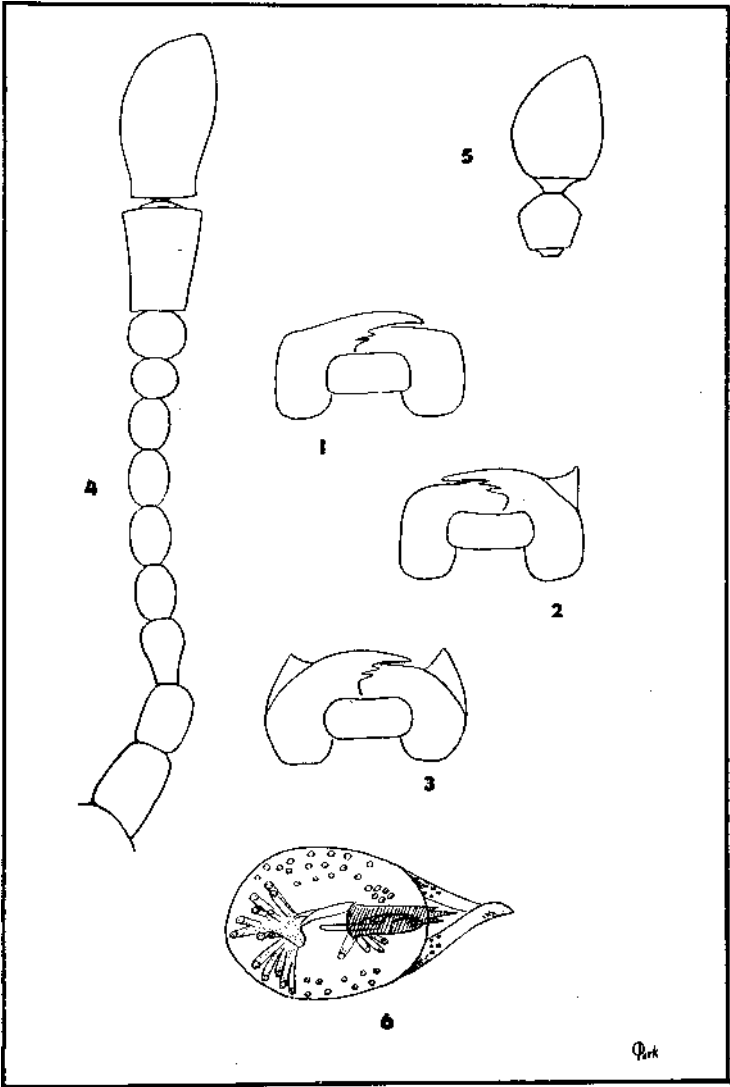


PLATE II

Present state of information about the distribution of Group LIV of *Reichenbachia*. Each symbol represents one of the species involved for a reported locality given in the checklist. Eight of the nine species are mapped. The ninth species, *stussineri* (Reitter) , is known only from one locality in Brazil. (I am indebted to Dr. H. K. Gloyd for the outline map.) Scale: 1 inch=350 miles.

